

**LBNL STANDARDS**  
**ELECTRICAL STANDARD DETAILS**

Detail #	Title
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**FIRE ALARM**

FA101	MODEL MX-316 CONNECTION DIAGRAM
FA102	TYPICAL WIRING
FA103	MODEL LA-16
FA104	MODEL LA-6
FA105	MX-203 DETAILS & NOTES
FA106	MX-203 LOGIC
FA107	MX-316 LOGIC
FA108	TYPICAL DETAILED LOGIC DIAGRAM FOR AC
FA109	TYPICAL DETAILED LOGIC DIAGRAM
FA110	SMOKE DETECTOR
FA111	HEAT DETECTOR – HORIZONTAL
FA112	BELL
FA113	SMOKE DETECTOR
FA114	HEAT DETECTOR - VERTICAL
FA115	STROBE BELL COMBINATION
FA116	WATERFLOW, PRESSURE, & TAMPER SWITCHES
FA117	FLAME DETECTOR - ULTRAVIOLET
FA118	FIRE CALL BOX
FA119	STROBE AND BELL MOUNTED SEPERATELY
FA120	DUCT SMOKE DETECTION
FA121	PTD- INTERNAL WIRING DIAGRAM
FA122	DOOR HOLDER FIELD WIRING DIAGRAM
FA123	DOOR HOLDER WITH SMOKE DETECTORS
FA124	EPO WIRING DIAGRAM
FA125	EPO, SHUNT TRIP & DAMPER CONTROL
FA126	AC UNIT SHUT DOWN WIRING DIAGRAM
FA127	CP-30 CONTROL PANEL
FA128	CP-31 CONTROL PANEL
FA129	CP-35 CONTROL PANEL
FA130	BT-34 BATTERY MODULE
FA131	PS-31 POWER SUPPLY
FA132	PS-35 POWER SUPPLY
FA133	BC-30 BATTERY CHARGER
FA134	BC-31 BATTERY CHARGER
FA135	BC-35 BATTERY CHARGER
FA136	BP-30 BLANK PANEL
FA137	HC-30 FIRE EXTINGUISHING CONTROL MODULE
FA138	TC-30U BATTERY TRANSFER MODULE
FA139	TL-30 TIME LIMIT MODULE
FA140	ZA-30 DUAL ION CLASS A ZONE MODULE
FA141	ZA-31 DUAL CONTACT CLASS A ZONE MODULE
FA142	HC-35 RELEASE MODULE
FA143	ZU-35DS DUAL ZONE MODULE WITH BUILT IN DISCONNECT SWITCH
FA144	ZU-35 DUAL ZONE MODULE
FA145	PM-31 PROGRAM MATRIX MODULE
FA146	SM-30 SWITCH MODULE

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<u>Detail #</u>	<u>Title</u>
FA147	SR-30 SUPPLEMENTAL RELAY MODULE
FA148	SR-32 SUPPLEMENTAL RELAY MODULE
FA149	DM-31 DISTRIBUTION MODULE
FA150	SR-33 SUPPLEMENTAL RELAY MODULE
FA151	PM-32 PROGRAM MATRIX MODULE
FA152	SR-35 SUPPLEMENTAL RELAY MODULE
FA153	AA-30 AUDIBLE ALARM
FA154	AA-30U AUDIBLE ALARM
FA155	EPO MATRIX DIAGRAM
FA156	FIRE ALARM MATRIX LOGIC DIAGRAM

### **GROUNDING**

GRD101	CABLE SPLICE
GRD102	CABLE TAP
GRD103	CABLE TO REBAR
GRD104	CABLE TO GROUND ROD TOP
GRD105	CROSS OF HORIZONTAL CABLE
GRD106	CABLE GROUND ROD SIDE
GRD107	CABLE TO LUG
GRD108	CABLE TO SURFACE
GRD109	GROUND CABLE STUB-UP THROUGH CONCRETE FLOOR DETAIL
GRD110	PARALLEL CLAMP CABLE TO CABLE
GRD111	CABLE TO PIPE
GRD112	CROSS CONNECTING GROUND CABLE
GRD113	TYPICAL FLOOR MOUNTING AND GROUNDING
GRD114	GROUND STATION
GRD115	COLUMN GROUNDING
GRD116	GROUND ROD AND WELL
GRD117	TYPICAL PULL BOX INSTALLATION
GRD118	FENCE POST GROUNDING
GRD119	FENCE POSTS GROUNDING STRAP CONNECTION
GRD120	GATE AND FENCE GROUNDING
GRD121	DRIVE AND WALK GATE GROUNDING
GRD122	ISOLATED GROUNDING DETAIL
GRD123	FENCE POSTS GROUNDING

### **INSTALLATION DETAILS**

INS101	CABLE FITTING
INS102	CCTV TYPICAL WIRING DIAGRAM
INS103	CCTV CONSTRUCTION NOTES
INS104	TYPICAL TRAPEZE SUPPORT (RACEWAY) FOR SEISMIC 3 & 4
INS105	EXPANSION FITTING

## **LBNL STANDARDS**

### **ELECTRICAL STANDARD DETAILS**

<u>Detail #</u>	<u>Title</u>
INS106	TYPICAL REINFORCED DUCT BANK
INS107	TYPICAL CONDUIT STUB-UP
INS108	CONDUIT RACK SEISMIC ZONES 3 & 4
INS109	TYPICAL MOTOR FEED FROM BELOW
INS110	MOTOR FEED FROM BELOW
INS111	MOTOR FEED FROM BELOW 2
INS112	HAZARDOUS LOCATION CONDUIT INSTALLATION
INS113	MOTORIZED DOOR OPERATOR-NONCLASSIFIED AREAS
INS114	CONDUITS-FLOOR PENETRATION
INS115	EXTERIOR BLDGS-POWER AND COMMUNICATIONS CONDUIT DETAIL
INS116	DETAIL OF WIREMOLD SUPPORT FROM CABLE TRAY
INS117	CONCRETE WALL SLAB PENETRATION 2 HOUR
INS118	CONCRETE WALL-SLAB PENETRATION 2 HOUR
INS119	GYPSUM WALL PENETRATION 1 HOUR
INS120	GYPSUM WALL PENETRATION 2 HOUR
INS121	CONCRETE SLAB PENETRATION
INS122	CONDUIT FIRE WALL PENETRATION
INS123	CCTV TYPICAL WIRING DIAGRAM
INS124	CCTV CONSTRUCTION NOTES
INS125	EH&S AIR SAMPLING STATION
INS126	ELECTRICAL PANEL LABEL
INS127	ELECTRICAL REQUIREMENTS FOR DEVICES ADJACENT TO EEWs

### **INTERCOM**

COM101	TEN DOOR MASTER
COM102	LOADING DOCK MASTER-SUB
COM103	TEN DOOR MASTER ONLY
COM104	LOADING DOCK MASTER-SUB
COM105	INTERCOM SURFACE MOUNT BACK BOX JUNCTION BOX LOCATION
COM106	INTERCOM SURFACE MOUNT DETAIL
COM107	INTERCOM FLUSH MOUNT BACK BOX LOCATIONS
COM108	INTERCOM FLUSH MOUNT DETAILS
COM109	TYPICAL MOUNTING ELEVATION
COM110	INTERCOM GENERAL NOTES

### **LASER INTERLOCK**

LI101	CONTROL SCHEMATIC
LI102	CONNECTION DIAGRAM - LASER INTERLOCK
LI103	CONNECTION DIAGRAM - DOOR INTERLOCK SWITCH
LI104	CONNECTION DIAGRAM - MAG. LOCK 1
LI105	CONNECTION DIAGRAM - PANIC BAR
LI106	CONNECTION DIAGRAM - KEYPAD 1

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LI107	CONTROL PANEL ELEVATION
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**LIGHTING**

LT101	Lighting DETAIL 1
LT102	Lighting Detail 3
LT103	LIGHT POLE FOUNDATION DETAIL
LT104	Lighting Section A
LT105	Lighting Detail 3
LT106	SITE PLAN - NEW STAIRWAY
LT107	DETAIL 1- HANDRAIL LAMP MOUNTING
LT108	SECTION A - NEW STAIRWAY
LT109	SCHEDULE NO.1
LT110	SCHEDULE NO.2
LT111	WIRING SCHEME NO.1
LT112	WIRING SCHEME NO.2
LT113	WIRING SCHEME NO.3
LT114	WIRING SCHEME NO.4
LT115	WIRING SCHEME NO.5
LT116	WIRING SCHEME NO.6
LT117	INSTALLATION DETAIL 1
LT118	INSTALLATION DETAIL 2
LT119	TYPICAL FLEXIBLE PENDANT MOUNTING FOR FLUORESCENT FIXTURES

**SECURITY CARD**

SEC101A	DOUBLE DOOR, ALTERNATE CONDUIT/CABLE INSTALLATION
SEC102A	SINGLE DOOR, ALTERNATE CONDUIT/CABLE INSTALLATION
SEC103A	BA-1 DOUBLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC103A	BA-2 DOUBLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC103A	BA-3 DOUBLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC103A	BA-4 DOUBLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC103A	BA-5 DOUBLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC104A	AA-1 SINGLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC104A	AA-2 SINGLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC104A	AA-3 SINGLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC104A	AA-4 SINGLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC104A	AA-5 SINGLE DOOR, CARD IN/FREE EXIT ELECTRIC LOCKSET
SEC105A	GA-1 SINGLE DOOR, ALARMED LOCAL NOISE (SIREN)
SEC105A	GA-2 SINGLE DOOR, ALARMED LOCAL NOISE (SIREN)
SEC105A	GA-3 SINGLE DOOR, ALARMED LOCAL NOISE (SIREN)
SEC105A	GA-4 SINGLE DOOR, ALARMED LOCAL NOISE (SIREN)
SEC105A	GA-5 SINGLE DOOR, ALARMED LOCAL NOISE (SIREN)
SEC106A	GB-1 SINGLE DOOR ALARMED/FREE EXIT MANUAL LOCKSET

**LBNL STANDARDS**  
**ELECTRICAL STANDARD DETAILS**

Detail #	Title
SEC106A	GB-2 SINGLE DOOR ALARMED/FREE EXIT MANUAL LOCKSET
SEC106A	GB-3 SINGLE DOOR ALARMED/FREE EXIT MANUAL LOCKSET
SEC106A	GB-4 SINGLE DOOR ALARMED/FREE EXIT MANUAL LOCKSET
SEC106A	GB-5 SINGLE DOOR ALARMED/FREE EXIT MANUAL LOCKSET
SEC107A	HA-1 DOUBLE DOORS, ALARMED LOCAL NOISE (SIREN)
SEC107A	HA-2 DOUBLE DOORS, ALARMED LOCAL NOISE (SIREN)
SEC107A	HA-3 DOUBLE DOORS, ALARMED LOCAL NOISE (SIREN)
SEC107A	HA-4 DOUBLE DOORS, ALARMED LOCAL NOISE (SIREN)
SEC107A	HA-5 DOUBLE DOORS, ALARMED LOCAL NOISE (SIREN)
SEC108A	HB-1 DOUBLE DOOR, ALARMED/FREE EXIT, MANUAL LOCKSET
SEC108A	HB-2 DOUBLE DOOR, ALARMED/FREE EXIT, MANUAL LOCKSET
SEC108A	HB-3 DOUBLE DOOR, ALARMED/FREE EXIT, MANUAL LOCKSET
SEC108A	HB-4 DOUBLE DOOR, ALARMED/FREE EXIT, MANUAL LOCKSET
SEC108A	HB-5 DOUBLE DOOR, ALARMED/FREE EXIT, MANUAL LOCKSET
SEC109	PEDESTRIAN GATE
SEC110	VERTICAL AND OR SLIDING GATE LOCK
SEC111A	AC-1 SINGLE DOOR, CARD IN FREE EXIT ELEC. PANIC W/ LATCH RETRACTION
SEC111A	AC-2 SINGLE DOOR, CARD IN FREE EXIT ELEC. PANIC W/ LATCH RETRACTION
SEC111A	AC-3 SINGLE DOOR, CARD IN FREE EXIT ELEC. PANIC W/ LATCH RETRACTION
SEC111A	AC-4 SINGLE DOOR, CARD IN FREE EXIT ELEC. PANIC W/ LATCH RETRACTION
SEC111A	AC-5 SINGLE DOOR, CARD IN FREE EXIT ELEC. PANIC W/ LATCH RETRACTION
SEC112A	KA-1 INTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC112A	KA-2 INTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC112A	KA-3 INTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC112A	KA-5 INTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC113A	KH-1 EXTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC113A	KH-2 EXTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC113A	KH-3 EXTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC113A	KH-5 EXTERIOR IP PoE CAMERA COLOR B&W, FIXED, AUTO-IRIS
SEC114A	BB-1 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC LOCKSET
SEC114A	BB-2 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC LOCKSET
SEC114A	BB-3 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC LOCKSET
SEC114A	BB-4 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC LOCKSET
SEC114A	BB-5 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC LOCKSET
SEC115A	BC-1 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC115A	BC-2 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC115A	BC-3 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC115A	BC-4 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC115A	BC-5 DOUBLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC116A	NP-1 ROLL-UP DOOR, CARD READER TOGGLE OPEN OR CLOSE
SEC116A	NP-2 ROLL-UP DOOR, CARD READER TOGGLE OPEN OR CLOSE
SEC116A	NP-3 ROLL-UP DOOR, CARD READER TOGGLE OPEN OR CLOSE
SEC116A	NP-4 ROLL-UP DOOR, CARD READER TOGGLE OPEN OR CLOSE
SEC116A	NP-5 ROLL-UP DOOR, CARD READER TOGGLE OPEN OR CLOSE
SEC117A	PB-1 ROOF HATCH, ALARMED LOCAL NOISE, SIREN
SEC117A	PB-2 ROOF HATCH, ALARMED LOCAL NOISE, SIREN
SEC117A	PB-3 ROOF HATCH, ALARMED LOCAL NOISE, SIREN

**LBNL STANDARDS**  
**ELECTRICAL STANDARD DETAILS**

Detail #	Title
SEC117A	PB-4 ROOF HATCH, ALARMED LOCAL NOISE, SIREN
SEC117A	PB-5 ROOF HATCH, ALARMED LOCAL NOISE, SIREN
SEC118A	PL-1 SLIDING DOOR, ALARMED LOCAL NOISE (SIREN)
SEC118A	PL-2 SLIDING DOOR, ALARMED LOCAL NOISE (SIREN)
SEC118A	PL-3 SLIDING DOOR, ALARMED LOCAL NOISE (SIREN)
SEC118A	PL-4 SLIDING DOOR, ALARMED LOCAL NOISE (SIREN)
SEC118A	PL-5 SLIDING DOOR, ALARMED LOCAL NOISE (SIREN)
SEC119A	SE5.70 -1 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -2 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -3 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -4 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -5 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -6 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -7 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -8 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -9 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -10 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -11 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -12 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -13 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -14 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -15 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -16 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -17 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC119A	SE5.70 -18 UTC SECURITY, PICTURE PERFECT, TWO MICRO5'S 32 READER
SEC120	ROLL-UP DOOR ALARM CONTACT-TYPE C
SEC122	TYP MAG LOCK STORE FRONT DOOR
SEC124	TYP MAG LOCK SINGLE DOOR
SEC125	TYP MAG LOCK DOOR WITH HOLD OPENS
SEC126	TYP MAG LOCK DOUBLE DOOR
SEC127A	AB-1 SINGLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC127A	AB-2 SINGLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC127A	AB-3 SINGLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC127A	AB-4 SINGLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC127A	AB-5 SINGLE DOOR, CARD IN FREE EXIT ELECTRIC PANIC
SEC138	TYP REX CONFIGURATION AND WIRING DIAGRAM
SEC139	MAG LOCK, PUSH BAR & BYPASS SWITCH WIRING DIAGRAM
SEC143	TYP 20DI WIRING DIAGRAM
SEC144	TYP 20DI SUPERVISED SWITCH INPUT
SEC146	TYP 16DOR WIRING DIAGRAM
SEC147	TYP 16DOR TO LOCK RELAY BOARD WIRING
SEC148	TYP 16DOR DRY CONTACT WIRING
SEC149	TYP MAGNETIC DOOR HOLDER WIRING DIAG
SEC150	TYP NON READER MAG-LOCK DOOR WIRING
SEC151	TYP MAGNETIC DOOR HOLDER-CLOSER WIRING DIAG
SEC152	MICRO-5 LOADING SCHEDULE
SEC153	DOOR SCHEDULE
SEC154	LOCK RELAY & FUSE BOARDS

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<u>Detail #</u>	<u>Title</u>
SEC155	TYPICAL X-RAY INTERLOCK RELAY WIRING
SEC156	TYPICAL X-RAY INTERLOCK RELAY ENCLOSURE MOUNTING DETAIL
SEC157	TYPICAL X-RAY AREA MONITOR CONTACT WIRING
SEC158	TYP LED WIRING DIAGRAM, ALTERNATE CONDUIT/CABLE INSTA
SEC159	TYPICAL X-RAY - NOTES

**TELEPHONE**

TEL101	CABLE TRAY LAYOUT
TEL102	CORRIDOR HORIZONTAL ELEVATION